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[10191/3170]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: MICKE et al.	: Examiner: J. M. Pathar
For: METHOD AND DEVICE FOR MEASURING THE ROTATIONAL SPEED OF A PULSE-ACTIVATED ELECTRICAL MOTOR	: Art Unit: 2862
Filed: September 12, 2003	: Confirmation No.: 6367
Serial No.: 10/660,910	:

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KENYON & KENYON LLP

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TRANSMITTAL

SIR:

Transmitted herewith for filing in the above-identified patent application, please find an Appeal Brief pursuant to 37 C.F.R. § 41.37.

Please charge the Appeal Brief fee of $500.00, and any other fees that may be required in connection with this communication to the deposit account of **Kenyon & Kenyon LLP**, deposit account number **11-0600**.

Respectfully submitted,

KENYON & KENYON LLP

Dated: 5 Dec 2006

By: (Reg. No. 36098) Michelle Carniaux
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APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

SIR:

On October 5, 2006, Appellants submitted a Notice of Appeal from the final rejection of claims 1-8 contained in the Final Office Action issued by the U.S. Patent and Trademark Office (the "PTO") on May 5, 2006, in the above-identified patent application. The Notice of Appeal was received by the PTO on October 10, 2006, thereby giving a 2-month response date of December 10, 2006. In accordance with 37 C.F.R. § 41.37, this brief is submitted in support of the appeal of the final rejection of claims 1-8. For at least the reasons set forth below, the final rejection of claims 1-8 should be reversed.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Robert Bosch GmbH, Postfach 30 02 20, 70442 Stuttgart, Federal Republic of Germany. Bosch is the assignee of the entire right, title, and interest in the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no interferences or other appeals related to the present application.

3. STATUS OF CLAIMS

Claims 1-8 are currently pending and stand finally rejected. Appellants appeal the rejection of claims 1-8.

4. STATUS OF AMENDMENTS

There are currently no amendments pending.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 1 recites a method for measuring a rotational speed of a pulse activated electric motor. The method includes fully activating the pulse activated electric motor for a defined measuring time by a circuit element provided for pulsing at a determined time interval. For example, Fig. 2 and page 4, lines 1-9 provide that the motor M (of Fig. 1) is activated for the measure time T_2 after the expiration of T_1, using the control circuit 2. The method further includes, during the time interval, measuring a frequency of current ripples, the frequency being proportional to the rotational speed. For example, Figs. 1-2, page 4, lines 1-9 and page 3, lines 3-9 provide for measuring the frequency of current ripples (see also, for example, Fig. 3), whereby the frequency is proportional to the rotational speed of the motor.

Independent claim 6 recites a device for measuring a rotational speed of a pulse activated electric motor (Fig. 1, element M) including a circuit element (Fig. 1, element 1), a current proportional voltage measuring device (Fig. 1, element 2) connected to the circuit element, an amplifier (Fig. 1, element 5) connected to a side of the circuit element and a plurality of filters (Fig. 1, elements 3,4) connected to the side of the circuit element. The measuring device of claim 6 further recites an evaluation unit (such as, for example, Fig. 1, element 7) for determining a frequency of current ripples of a current flowing in a measured phase in which the pulse activated electric motor is fully activated. See also, page 3, line 23 – page 4, line 9.

Independent claim 8 recites a method for measuring a rotational speed of a pulse activated electric motor. The method includes fully activating the pulse activated electric motor for a defined measuring time. For example, Fig. 2 and page 4, lines 1-9 provide that the motor M (of Fig. 1) is activated for the measure time T_2 after the

expiration of T_1. The method further includes, during the defined measuring time and while the pulse activated electric motor is fully activated, measuring a frequency of current ripples, the frequency being proportional to the rotational speed. For example, Figs. 1-2, page 4, lines 1-9 and page 3, lines 3-9 provide for measuring the frequency of current ripples (see also, for example, Fig. 3), whereby the frequency is proportional to the rotational speed of the motor.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-8 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,236,1756 issued to ("Mourad").

7. ARGUMENTS

Mourad does not Anticipate Claims 1-8

Claims 1-8 were finally rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,236,175 issued to ("Mourad"). Applicants submit that currently pending claims 1-8 are patentable over Mourad.

To anticipate a claim under 35 U.S.C. § 102(b), the Office must demonstrate that each and every claim limitation is *identically disclosed* in a single prior art reference. (See Scripps Clinic & Research Foundation v. Genentech, Inc., 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991)). "The identical invention must be shown in as complete detail as is contained in the claim." M.P.E.P. § 2131. If any claimed element is absent from a prior art reference, it cannot anticipate the claim. See Rowe v. Dror, 112 F.3d 473, 478 (Fed. Cir. 1997).

Claims 1, 6 and 8 recite, *inter alia*, measuring a rotational speed of a pulse-activated electric motor including "fully activating the pulse-activated electric motor" (as recited in claims 1 and 8) and "an evaluation unit for determining a frequency of current ripples for a current flowing in a measured phase in which the pulse-activated electric motor is fully activated" (as recited in Claim 6). As described in the specification, the measurement of the rotational speed is determined based on the motor M being "fully activated for a certain period of time, or measuring time T_2 (see FIG. 2) after the expiration of a time interval T_1." (Page 4, lines 1-2). (See also, Fig. 2).

Mourad, in contrast, discloses detecting the rotational speed of a DC motor by specifically "interrupting the application of" a pulse width modulated square wave control signal for a defined period of time. (col. 1, lines 63-64). Mourad thereupon acquires a

"signal correlated to the voltage across" the windings and detects one or more characteristics of the signal based on the speed of the motor. (col. 1, line 64 – col. 2, line 2). Stated another way, "[t]he electronic unit 8 is set up to detect periodically the effective speed of rotation of the motor 1 by **periodically interrupting** the application of the PWM control signal to the gate of the electronic switch." (emphasis added) (col. 3, lines 7-10). (See also col. 4, lines 1-9). This is also visually illustrated in Fig. 2, with the interruption beginning at time t_1, with measurements beginning at time t_2.

Claims recite "Fully Activating The Motor"

In supporting the finality of the rejection of claims 1-8, the Examiner relies in part on the position that the term "fully activating the motor" is improperly broad. Appellants respectfully disagree with this assertion and submit that proper breadth of this limitation based on the term itself, specifically that the motor is at least activated and more specifically fully activated. Regardless thereof, as discussed below, Appellants submit that even with the broadest reasonable interpretation of the "fully activating the motor" term, Mourad fails to identically disclose all of the claimed limitations of claims 1-8.

Mourad Describes a System that Interrupts the Electric Motor Operation

A primary component of the Mourad system is that Mourad **cuts off power** to the motor 1 to measure the speed of the motor. For example, the abstract describes "the operation of interrupting the application of the said control system to the electronic switch..." As described in the specification (with reference to Fig. 1), Mourad describes the "electronic unit 8 is set up to detect periodically the effective speed of rotation of the motor 1 by periodically **interrupting the application of the PWM control signal** to the gate of the electronic switch." (emphasis added). (col. 3, lines 7-10).

Continuing on in same paragraph of the specification:

> Upon occurrence of such an interruption, as illustrated by way of an example at instant t_1 in FIG. 2, the voltage V_o initially has a transient variation with a (modest) over voltage peak substantially equal to the forward conduction voltage of the recirculation diode 6, followed by a descent to a level which is on average lower then the voltage V_b (in Fig. 2, for clarity, the time scale between t_1 and t_2 has been expanded). Once this initial transient has decayed, whilst the application of the control signal to the input of the switch 5 remains interrupted (time interval between t_2 and t_3 in FIG. 2) the voltage V_0 has an average value equal to the difference between the voltage VB delivered by the source 4 and the electromotive force EMF developed across the winding 2 of the electric motor 1. In particular, between instants t_2 and t_3, the variations of the voltage V_0 has a marked ripple corresponding to the ripple of the electromotive force EMF due to the switching of the contacts between brushes and the segments of the commutator of the electric motor 1.
> (col. 3, lines 10-28)

As described above, Mourad describes **interrupting** the voltage to the motor and it is through this interrupted period of time, voltage ripples are measured. In this interrupted stage, Mourad specifically describes an **inactive** motor through the cessation of the PWM control signal from the PWM driver circuit 7 to the gate of the switch 5.

Mourad requires the **interruption** of the motor. This interruption of the motor by its very nature is not and can not be consistent with "fully activating" the motor as recited in claims 1, 6 and 8. Regardless of the breadth of the "fully activating" term, it cannot be interpreted to include interrupting the engine as that is specifically contradictory to the term itself. Stated in more general terms, Mourad describes a system that causes the motor to lose speed based on the interrupted activation and claims 1, 6 and 8 recite a motor having an increase in speed based on the full activation.

Mourad teaches a completely different system, a control circuit that interrupts the PWM control signal compared with the recited limitation of "fully activating the motor" of claims 1, 6 and 8. The Mourad system operates in a completely different manner by interrupting the operation of the engine, whereas the claimed invention of claims 1, 6 and 8 do not interrupt the engine, but in direct contrast, fully activate the motor. The Mourad system produces a completely different result, which is a speed measurement at the cost of reducing the speed of the motor, compared with the claimed invention of claims 1, 6 and 8 actually increasing the speed of the motor during the fully activated session. As such, Mourad fails to identical disclose the claimed invention of claims 1, 6 and 8.

Claims 2-5 and 7 depend from claims 1 and 6, respectively, and recite further patentable subject matter over Mourad. Claims 2-5 and 7 are allowable for at least the reasons stated above with respect to claims 1 and 6, respectively.

For at least the foregoing reasons, claim 1, 6 and 8, as well as their dependent claims 2-5 and 7, are not anticipated by Mourad.

8. CONCLUSION

For at least the reasons indicated above, Appellants respectfully submit that the art of record does not teach or suggest Appellants' invention as recited in the claims of the above-identified application. Accordingly, it is respectfully submitted that the invention recited in the claims of the present application is new, non-obvious and useful. Reversal of the Examiner's rejections and objections of the claims is therefore respectfully requested.

Respectfully submitted,

Cn no 36098)
Michelle Carnaby

Dated: 5 Dec 02

By: _____
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CLAIMS APPENDIX

1. A method for measuring a rotational speed of a pulse activated electric motor, comprising:

fully activating the pulse activated electric motor for a defined measuring time by a circuit element provided for pulsing at a time interval to be determined; and

during the time interval, measuring a frequency of current ripples, the frequency being proportional to the rotational speed.

2. The method as recited in Claim 1, further comprising:

measuring a current proportional voltage; and

converting the measured current proportional voltage to a square wave voltage after filtering out a DC component.

3. The method as recited in Claim 2, further comprising:

determining intervals between one of rising edges and falling edges of square wave voltage pulses in order to determine a frequency of the square wave voltage.

4. The method as recited in Claim 2, further comprising:

determining intervals between time midpoints of square wave voltage pulses in order to determine a frequency of the square wave voltage.

5. The method as recited in Claim 1, wherein:

at least one of time intervals and measuring times are kept variable as a function of at least one of a supply voltage, a temperature, and load torque.

6. A device for measuring a rotational speed of a pulse activated electric motor, comprising:

a circuit element;

a current proportional voltage measuring device connected to the circuit element;

an amplifier connected to a side of the circuit element;

a plurality of filters connected to the side of the circuit element; and

an evaluation unit for determining a frequency of current ripples of a current flowing in a measured phase in which the pulse activated electric motor is fully activated.

7. The device as recited in Claim 6, wherein:

the evaluation unit includes a comparator for converting an AC component of a current proportional voltage into square wave voltage pulses.

8. A method for measuring a rotational speed of a pulse activated electric motor, comprising:

fully activating the pulse activated motor for a defined measuring time; and

during the defined measuring time and while the pulse activated electric motor is fully activated, measuring a frequency of current ripples, the frequency being proportional to the rotational speed.

EVIDENCE APPENDIX

Appellants submit no additional evidence.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.